

# AEGIS: A User-Friendly, Data-Entry Model for Prenatal Computerized Patient Records

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**Background.** Effective computerized patient record (CPR) systems are finally gaining acceptance in outpatient offices and centers. Because most of these systems are designed for use by primary care providers, they are not always ideal for specialty record management.

Obstetrical care requires frequent, timely data collection and retrieval. There is also great risk involved if clinical tasks are omitted or not performed at the appropriate gestational age. Computerization of prenatal records is an ideal method for managing data and minimizing risk. Most CPR systems do not provide the unique features required by an obstetrical CPR. They usually do not automate the calculation of due dates and gestational ages. Nor do they provide the specific clinical reminders and alerts needed in quality obstetrical care.

The greatest challenge in designing prenatal CPRs is to make a data-entry interface that is user-friendly, intuitive, and flexible.<sup>1</sup> It must also be easier to use than existing paper systems. The purpose of this project is to demonstrate a prenatal CPR data-entry prototype which meets this challenge.

**System.** AEGIS (An Electronic Gestational Information System) has been designed to be such a model. It was developed using the object-oriented, graphical user interface (GUI) of Paradox 7, running on Pentium 120 personal computer, with 16 megabytes of RAM. Data which are continually required for efficient prenatal care are always visible on screen. Most other display and entry forms are one click away. The main components of the system are: (i) automated problem list generation, (ii) SOAP notes linked to the problem list, (iii) extensive gestational age coordination, and (iv) time-sensitive, task-completion alerts and reminders.

AEGIS also demonstrates the use of clinical practice guidelines. These appear in data-entry forms which assist providers in the management of high risk prenatal conditions such as toxemia of pregnancy and gestational diabetes. Other forms display laboratory data for

specific evaluation such as hematologic values, urologic results, and glucose tolerance tests. A prenatal paper record can be easily printed for transfer to labor and delivery suites.

Although a formal data dictionary has not been used in this model, many fields provide selection lists which elicit standardized responses. Accurate statistical analysis can be performed on the data in these fields. One example of an analysis would be a determination of the percentage of women over 34 years of age whose genetic amniocentesis showed Down syndrome.

**Evaluation.** AEGIS is being beta tested in our clinic. Our patients are already familiar with the use of an interactive primary care CPR. After seeing AEGIS in action, patients have appreciated the advantage of the specialized interface over the primary care system. Providers who have seen the model have been impressed with the ease of data entry, the accessibility of the obstetrical data, and the risk management features of the system.

**Conclusions.** AEGIS is a working, prenatal, CPR data-entry prototype. It is Windows-based and object-oriented in design. It can therefore serve as a starting point for the development of prenatal, front-end modules for any large CPR system. It is hoped that its concepts also can be incorporated into the design of future modules, as voice input and the Internet play more of a role in computerized patient record systems.<sup>2</sup>

## References

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2. Cimino JJ, Socratous SA, Clayton PD. Internet as clinical information system: application development using the World Wide Web. *Yearbook of Medical Informatics* 1996;255-266.